

# Source Water Assessment Program (SWAP) Report

## For

### Carlisle Public School



Prepared by the  
Massachusetts Department of  
Environmental Protection,  
Bureau of Resource Protection,  
Drinking Water Program

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**Table 1: Public Water System (PWS) Information**

<i>PWS NAME</i>	Carlisle Public School
<i>PWS Address</i>	83 School Street
<i>City/Town</i>	Carlisle
<i>PWS ID Number</i>	3051004
<i>Local Contact</i>	David R. Flannery - Operator
<i>Phone Number</i>	978-369-6550

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Wilkins Well	3051004-01G	172	467	High

#### What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- ? inventory land uses within the recharge areas of all public water supply sources;
- ? assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? publicize the results to provide support for improved protection.

#### Maintaining Your Good Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

## INTRODUCTION

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

#### Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

#### This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments including a Map of the Protection Areas

## 1. DESCRIPTION OF THE WATER SYSTEM

#### The Well

The well for the Carlisle Public School is located to the southwest side of the main school building. The well is 8 inches in diameter and is drilled to a depth of 400 feet. Wilkins Well has a Zone I radius of 170 feet and an Interim Wellhead Protection Area (IWPA) radius of 467 feet. The well is located in a sand and gravel aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the well location, Zone I and IWPA.

#### The Water Quality

The water quality of the well currently meets all US Environmental Protection Agency and MA Department of Environmental Protection (DEP) drinking water standards. The well serving the Carlisle Public School has chlorine added as a disinfectant. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above.

### What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.

- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

### What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

## 2. DISCUSSION OF LAND USES IN THE PROTECTION AREAS

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

**Key issues include:**

1. **inappropriate activities in Zone I;**
2. **potential discharge of hazardous waste to the septic system; and**
3. **floor drains**

The overall ranking of susceptibility to contamination for the well is high, based on the presence of at least one high threat land use or activity in the IWPA.

1. **Zone I** - Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The Carlisle Public School's Zone I contains school buildings, access road, and dumpster in the loading dock area adjacent to the kitchen. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

2. **Hazardous Materials/Waste** - Carlisle Public School currently participates with the Town of Carlisle in its Household Hazardous Waste collection to discard many of its spent products (i.e. motor oil, fluorescent bulbs, and batteries). Discharge from photographic, art, and science classrooms, and maintenance garage **MUST** go to a DEP approved tight tank. Staff should be trained on proper transportation and disposal of hazardous materials/waste.

3. **Floor Drains** - The floor drains located in the maintenance garage and boiler room are prohibited by DEP regulations. Compliance can be achieved by rerouting the discharges to a DEP approved tight tank or eliminating the floor drains if they aren't needed.

## 3. PROTECTION RECOMMENDATIONS

Implementing protection measures and best management practices (BMPs) will reduce the Wilkins Well's susceptibility to contamination. Carlisle Public School is commended for participating in the Town of Carlisle's Hazardous Household Waste collection (refer to comments in Facilities Management section); for using calcium chloride instead of sodium chloride as a deicing agent; for not using pesticides on the school property; for being a member of the Center District Water Quality Committee; and for participating in the "Tools for Schools" indoor air quality program. Carlisle Public School should review and adopt the following recommendations at the school:

**Table 2: Table of Activities within the Water Supply Protection Areas**

Facility Type	Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
School	Storage, use, and improper disposal of hazardous materials	Yes	Yes	High	Materials in photographic, art, and science classrooms – sink drains discharge to septic system in IWPA
	School buildings and maintenance garage	Yes	Yes	Moderate	Non-water supply structures in Zone I; floor drains in cafeteria and boiler room connected to septic system; maintenance garage floor drain is connected to a storm drain that discharges to IWPA
	Parking lot, driveways & roads	Yes	Yes	Moderate	Limit road salt usage and provide drainage away from wells
	Septic System	No	Yes	Moderate	See septic systems brochure in the appendix
	Storm drains	No	Yes	Low	Floor drain in garage discharges to storm drain

\* For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - [www.state.ma.us/dep/brp/dws](http://www.state.ma.us/dep/brp/dws)

## Glossary

**Zone I:** The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

**IWPA:** A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

**Zone II:** The primary recharge area defined by a hydrogeologic study.

**Aquifer:** An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

**Hydrogeologic Barrier:** An underground layer of impermeable material that resists penetration by water.

**Recharge Area:** The surface area that contributes water to a well.

## Zone I:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Remove all non-water supply activities (especially the dumpster at the loading dock outside the kitchen door) from the Zone I to comply with DEP's Zone I requirements. Please note that water systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying their system.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ **Bring the floor drains into compliance with Department Regulations** (refer to Industrial Floor Drain Brochure attached).
  - \* Contact the UIC coordinator for the Northeast Region Office of the Department for additional technical assistance (Ron Stelline Tele. #978-661-7656).
  - \* Interim Actions: cease using the floor drains
- ✓ Prohibit public access to the well by gating access road, fencing, and posting signs.
- ✓ Contain chlorine day tank; properly contain all oils, paints and fuels stored in garage area.
- ✓ Conduct regular inspections of the Zone I and IWPA. Look for illegal dumping, evidence of vandalism, check any above ground tanks for leaks, etc.
- ✓ Redirect road and parking lot drainage away from well. Work with your community to ensure that stormwater runoff in the IWPA is directed away from the well and is treated according to DEP guidance.
- ✓ Continue practice of not using pesticides, fertilizers or road salt within Zone I.
- ✓ Use propane or natural gas for back-up power sources.

## Funding:

The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the 2001 "Wellhead Protection Grant Program". For additional information please refer to the attached program fact sheet from last year (Please note each program year the Department posts a new Request for Response for the Grant program (RFR)).

## Training and Education:

- ✓ Train staff on proper hazardous material use, transportation, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff.
- ✓ Post drinking water protection area signs at key visibility locations.

- ✓ Incorporate groundwater education into school curriculum (K-6 and 7-12 curricula available; contact DEP for copies).

## Facilities Management:

- ✓ Schools staff indicated they currently do not fertilizers or apply pesticides in the Zone I.
- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, see the hazardous materials guidance manual at <http://www.dep.state.ma.us/dep/bwp/dhm/dhmpubs.htm>
- ✓ Eliminate non-sanitary wastewater discharges to on-site septic systems. In areas where hazardous materials are used or stored, floor drains must be sealed or discharge to a tight tank.
- ✓ Upgrade all oil/hazardous material storage tanks to incorporate proper containment and safety practices.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems.
- ✓ Concrete pads should slope away from well and well casing should extend above ground.

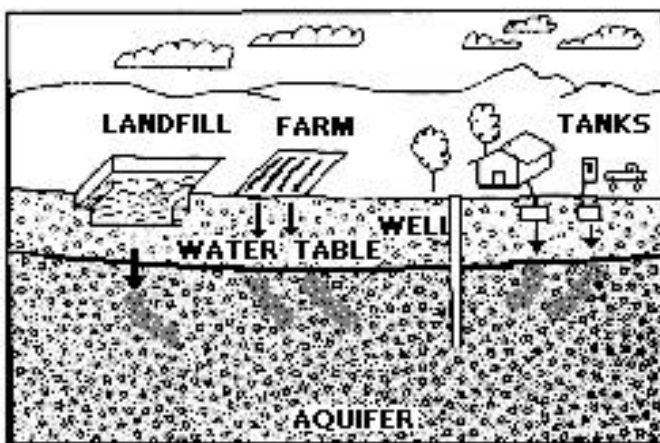


Figure 1: Example of how a well could become contaminated by different land uses and activities.

### **For More Information:**

Contact Anita Wolovick in DEP's Wilmington Office at (978) 661-7768 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on DEP's web site at:

[www.state.ma.us/dep/brp/dws](http://www.state.ma.us/dep/brp/dws)

- ✓ For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. If PCBs are present, urge their immediate replacement. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.
- ✓ In order for Carlisle Public School to transport hazardous waste/waste oil to the Town of Carlisle's Hazardous Waste Collection Center, the school must complete and submit to DEP the enclosed Generator Registration form.
  - \* Contact the Hazardous Waste coordinator for the Northeast Region Office of the Department for additional technical assistance (John Keating Tele. #978-661-7631).

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

### **Planning:**

- ✓ Work with local officials in Carlisle in creating a Groundwater Protection District Bylaw to meet current DEP regulations, and include the Carlisle Public School's IWPA to assist you in improving protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

### **Attachments:**

- Map of the Public Water Supply (PWS) Protection Area.
- Wellhead Protection Tips For Small Public Water Systems
- Industrial Floor Drains brochure
- Underground Injection Wells and Your Drinking Water
- A Reference Guide for Homeowners: Your Septic System
- Summary of Recommended Source Water Protection Measures
- Protecting Groundwater from Pesticides
- Healthy Lawn/Healthy Environment
- Source Protection Sign Order Form
- DEP Publications - Hazardous Waste Management
- Hazardous Waste & Your School
- Massachusetts Department of Environmental Protection - Generator Registration and Fact Sheet

Copies of this assessment have been provided to the water supplier, town boards, the town library and the local media.

### **Additional Documents:**

To help with source protection efforts, more information is available by request or online at [www.state.ma.us/dep/brp/dws](http://www.state.ma.us/dep/brp/dws), including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix